RAW SEQUENCE LISTING DATE: 08/02/2004
PATENT APPLICATION: **US/10/685,237** TIME: 14:39:24

Input Set : **N:\Crf3\RULE60\10685237.raw**
Output Set: **N:\CRF4\08022004\J685237.raw**

SEQUENCE LISTING
1 (1) GENERAL INFORMATION:
2   (i) APPLICANT: Kenneth B. Stokes
3   Jos,e Morissette
4   (ii) TITLE OF INVENTION: SYSTEMS FOR ENHANCING CARDIAC SIGNAL
5   SENSING BY CARDIAC PACEMAKERS THROUGH
6   GENETIC TREATMENT
7   (iii) NUMBER OF SEQUENCES: 12
8   (iv) CORRESPONDENCE ADDRESS:
9   (A) ADDRESSEE: Woodcock Washburn Kurtz Mackiewicz & Norris LLP
10   (B) STREET: One Liberty Place - 46th Floor
11   (C) CITY: Philadelphia
12   (D) STATE: PA
13   (E) COUNTRY: U.S.A.
14   (F) ZIP: 19103
15   (v) COMPUTER READABLE FORM:
16   (A) MEDIUM TYPE: Floppy disk
17   (B) COMPUTER: IBM PC compatible
18   (C) OPERATING SYSTEM: PC-DOS/MS-DOS
19   (D) SOFTWARE: WordPerfect 6.1
20   (vi) CURRENT APPLICATION DATA:
C--> 21   **(A) APPLICATION NUMBER: US/10/685,237**
C--> 22   **(B) FILING DATE: 14-Oct-2003**
W--> 27   **(C) CLASSIFICATION:**
24   (vii) PRIOR APPLICATION DATA:
25   (A) APPLICATION NUMBER: US/09/514,907
26   (B) FILING DATE: 08-Feb-2000
29   (viii) ATTORNEY/AGENT INFORMATION:
30   (A) NAME: Paul K. Legaard
31   (B) REGISTRATION NUMBER: 38,534
32   (C) REFERENCE/DOCKET NUMBER: MEDT-0029/P-3586
33   (ix) TELECOMMUNICATION INFORMATION:
34   (A) TELEPHONE: (215) 568-3100
35   (B) TELEFAX: (215) 568-3439
36 (2) INFORMATION FOR SEQ ID NO: 1:
37   (i) SEQUENCE CHARACTERISTICS:
38   (A) LENGTH: 6048 bases
39   (B) TYPE: nucleic acid
40   (C) STRANDEDNESS: double
41   (D) TOPOLOGY: linear
42   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
43   ATG GCA AAC TTC CTA TTA CCT CGG GGC ACC AGC AGC TTC CGC AGG   45
44   Met Ala Asn Phe Leu Leu Pro Arg Gly Thr Ser Ser Phe Arg Arg

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45      1                 5                    10                      15
46      TTC ACA CGG GAG TCC CTG GCA GCC ATC GAG AAG CGC ATG GCG GAG      90
47      Phe Thr Arg Glu Ser Leu Ala Ala Ile Glu Lys Arg Met Ala Glu
48                         20                  25                      30
49      AAG CAA GCC CGC GGC TCA ACC ACC TTG CAG GAG AGC CGA GAG GGG     135
50      Lys Gln Ala Arg Gly Ser Thr Thr Leu Gln Glu Ser Arg Glu Gly
51                         35                  40                      45
52      CTG CCC GAG GAG GAG GCT CCC CGG CCC CAG CTG GAC CTG CAG GCC     180
53      Leu Pro Glu Glu Glu Ala Pro Arg Pro Gln Leu Asp Leu Gln Ala
54                         50                  55                      60
55      TCC AAA AAG CTG CCA GAT CTC TAT GGC AAT CCA CCC CAA GAG CTC     225
56      Ser Lys Lys Leu Pro Asp Leu Tyr Gly Asn Pro Pro Gln Glu Leu
57                         65                  70                      75
58      ATC GGA GAG CCC CTG GAG GAC CTG GAC CCC TTC TAT AGC ACC CAA     270
59      Ile Gly Glu Pro Leu Glu Asp Leu Asp Pro Phe Tyr Ser Thr Gln
60                         80                  85                      90
61      AAG ACT TTC ATC GTA CTG AAT AAA GGC AAG ACC ATC TTC CGG TTC     315
62      Lys Thr Phe Ile Val Leu Asn Lys Gly Lys Thr Ile Phe Arg Phe
63                         95                  100                     105
64      AGT GCC ACC AAC GCC TTG TAT GTC CTC AGT CCC TTC CAC CCA GTT     360
65      Ser Ala Thr Asn Ala Leu Tyr Val Leu Ser Pro Phe His Pro Val
66                         110                 115                     120
67      CGG AGA GCG GCT GTG AAG ATT CTG GTT CAC TCG CTC TTC AAC ATG     405
68      Arg Arg Ala Ala Val Lys Ile Leu Val His Ser Leu Phe Asn Met
69                         125                 130                     135
70      CTC ATC ATG TGC ACC ATC CTC ACC AAC TGC GTG TTC ATG GCC CAG     450
71      Leu Ile Met Cys Thr Ile Leu Thr Asn Cys Val Phe Met Ala Gln
72                         140                 145                     150
73      CAC GAC CCT CCA CCC TGG ACC AAG TAT GTC GAG TAC ACC TTC ACC     495
74      His Asp Pro Pro Pro Trp Thr Lys Tyr Val Glu Tyr Thr Phe Thr
75                         155                 160                     165
76      GCC ATT TAC ACC TTT GAG TCT CTG GTC AAG ATT CTG GCT CGA GCT     540
77      Ala Ile Tyr Thr Phe Glu Ser Leu Val Lys Ile Leu Ala Arg Ala
78                         170                 175                     180
79      TTC TGC CTG CAC GCG TTC ACT TTC CTT CGG GAC CCA TGG AAC TGG     585
80      Phe Cys Leu His Ala Phe Thr Phe Leu Arg Asp Pro Trp Asn Trp
81                         185                 190                     195
82      CTG GAC TTT AGT GTG ATT ATC ATG GCA TAC ACA ACT GAA TTT GTG     630
83      Leu Asp Phe Ser Val Ile Ile Met Ala Tyr Thr Thr Glu Phe Val
84                         200                 205                     210
85      GAC CTG GGC AAT GTC TCA GCC TTA CGC ACC TTC CGA GTC CTC CGG     675
86      Asp Leu Gly Asn Val Ser Ala Leu Arg Thr Phe Arg Val Leu Arg
87                         215                 220                     225
88      GCC CTG AAA ACT ATA TCA GTC ATT TCA GGG CTG AAG ACC ATC GTG     720
89      Ala Leu Lys Thr Ile Ser Val Ile Ser Gly Leu Lys Thr Ile Val
90                         230                 235                     240
91      GGG GCC CTG ATC CAG TCT GTG AAG AAG CTG GCT GAT GTG ATG GTC     765
92      Gly Ala Leu Ile Gln Ser Val Lys Lys Leu Ala Asp Val Met Val
93                         245                 250                     255
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 94     CTC ACA GTC TTC TGC CTC AGC GTC TTT GCC CTC ATC GGC CTG CAG     810
 95     Leu Thr Val Phe Cys Leu Ser Val Phe Ala Leu Ile Gly Leu Gln
 96                 260                 265                 270
 97     CTC TTC ATG GGC AAC CTA AGG CAC AAG TGT GTG CGC AAC TTC ACA     855
 98     Leu Phe Met Gly Asn Leu Arg His Lys Cys Val Arg Asn Phe Thr
 99                 275                 280                 285
100      GCG CTC AAC GGC ACC AAC GGC TCC GTG GAG GCC GAC GGC TTG GTC     900
101      Ala Leu Asn Gly Thr Asn Gly Ser Val Glu Ala Asp Gly Leu Val
102                 290                 295                 300
103      TGG GAA TCC CTG GAC CTT TAC CTC AGT GAT CCA GAA AAT TAC CTG     945
104      Trp Glu Ser Leu Asp Leu Tyr Leu Ser Asp Pro Glu Asn Tyr Leu
105                 305                 310                 315
106      CTC AAG AAC GGC ACC TCT GAT GTG TTA CTG TGT GGG AAC AGC TCT     990
107      Leu Lys Asn Gly Thr Ser Asp Val Leu Leu Cys Gly Asn Ser Ser
108                 320                 325                 330
109      GAC GCT GGG ACA TGT CCG GAG GGC TAC CGG TGC CTA AAG GCA GGC    1035
110      Asp Ala Gly Thr Cys Pro Glu Gly Tyr Arg Cys Leu Lys Ala Gly
111                 335                 340                 345
112      GAG AAC CCC GAC CAC GGC TAC ACC AGC TTC GAT TCC TTT GCC TGG    1080
113      Glu Asn Pro Asp His Gly Tyr Thr Ser Phe Asp Ser Phe Ala Trp
114                 350                 355                 360
115      GCC TTT CTT GCA CTC TTC CGC CTG ATG ACG CAG GAC TGC TGG GAG    1125
116      Ala Phe Leu Ala Leu Phe Arg Leu Met Thr Gln Asp Cys Trp Glu
117                 365                 370                 375
118      CGC CTC TAT CAG CAG ACC CTC AGG TCC GCA GGG AAG ATC TAC ATG    1170
119      Arg Leu Tyr Gln Gln Thr Leu Arg Ser Ala Gly Lys Ile Tyr Met
120                 380                 385                 390
121      ATC TTC TTC ATG CTT GTC ATC TTC CTG GGG TCC TTC TAC CTG GTG    1215
122      Ile Phe Phe Met Leu Val Ile Phe Leu Gly Ser Phe Tyr Leu Val
123                 395                 400                 405
124      AAC CTG ATC CTG GCC GTG GTC GCA ATG GCC TAT GAG GAG CAA AAC    1260
125      Asn Leu Ile Leu Ala Val Val Ala Met Ala Tyr Glu Glu Gln Asn
126                 410                 415                 420
127      CAA GCC ACC ATC GCT GAG ACC GAG GAG AAG GAA AAG CGC TTC CAG    1305
128      Gln Ala Thr Ile Ala Glu Thr Glu Glu Lys Glu Lys Arg Phe Gln
129                 425                 430                 435
130      GAG GCC ATG GAA ATG CTC AAG AAA GAA CAC GAG GCC CTC ACC ATC    1350
131      Glu Ala Met Glu Met Leu Lys Lys Glu His Glu Ala Leu Thr Ile
132                 440                 445                 450
133      AGG GGT GTG GAT ACC GTG TCC CGT AGC TCC TTG GAG ATG TCC CCT    1395
134      Arg Gly Val Asp Thr Val Ser Arg Ser Ser Leu Glu Met Ser Pro
135                 455                 460                 465
136      TTG GCC CCA GTA AAC AGC CAT GAG AGA AGA AGC AAG AGG AGA AAA    1440
137      Leu Ala Pro Val Asn Ser His Glu Arg Arg Ser Lys Arg Arg Lys
138                 470                 475                 480
139      CGG ATG TCT TCA GGA ACT GAG GAG TGT GGG GAG GAC AGG CTC CCC    1485
140      Arg Met Ser Ser Gly Thr Glu Glu Cys Gly Glu Asp Arg Leu Pro
141                 485                 490                 495
142      AAG TCT GAC TCA GAA GAT GGT CCC AGA GCA ATG AAT CAT CTC AGC    1530
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143        Lys Ser Asp Ser Glu Asp Gly Pro Arg Ala Met Asn His Leu Ser
144                    500                 505                 510
145        CTC ACC CGT GGC CTC AGC AGG ACT TCT ATG AAG CCA CGT TCC AGC   1575
146        Leu Thr Arg Gly Leu Ser Arg Thr Ser Met Lys Pro Arg Ser Ser
147                    515                 520                 525
148        CGC GGG AGC ATT TTC ACC TTT CGC AGG CGA GAC CTG GGT TCT GAA   1620
149        Arg Gly Ser Ile Phe Thr Phe Arg Arg Arg Asp Leu Gly Ser Glu
150                    530                 535                 540
151        GCA GAT TTT GCA GAT GAT GAA AAC AGC ACA GCG CGG GAG AGC GAG   1665
152        Ala Asp Phe Ala Asp Asp Glu Asn Ser Thr Ala Arg Glu Ser Glu
153                    545                 550                 555
154        AGC CAC CAC ACA TCA CTG CTG GTG CCC TGG CCC CTG CGC CGG ACC   1710
155        Ser His His Thr Ser Leu Leu Val Pro Trp Pro Leu Arg Arg Thr
156                    560                 565                 570
157        AGT GCC CAG GGA CAG CCC AGT CCC GGA ACC TCG GCT CCT GGC CAC   1755
158        Ser Ala Gln Gly Gln Pro Ser Pro Gly Thr Ser Ala Pro Gly His
159                    575                 580                 585
160        GCC CTC CAT GGC AAA AAG AAC AGC ACT GTG GAC TGC AAT GGG GTG   1800
161        Ala Leu His Gly Lys Lys Asn Ser Thr Val Asp Cys Asn Gly Val
162                    590                 595                 600
163        GTC TCA TTA CTG GGG GCA GGC GAC CCA GAG GCC ACA TCC CCA GGA   1845
164        Val Ser Leu Leu Gly Ala Gly Asp Pro Glu Ala Thr Ser Pro Gly
165                    605                 610                 615
166        AGC CAC CTC CTC CGC CCT GTG ATG CTA GAG CAC CCG CCA GAC ACG   1890
167        Ser His Leu Leu Arg Pro Val Met Leu Glu His Pro Pro Asp Thr
168                    620                 625                 630
169        ACC ACG CCA TCG GAG GAG CCA GGC GGC CCC CAG ATG CTG ACC TCC   1935
170        Thr Thr Pro Ser Glu Glu Pro Gly Gly Pro Gln Met Leu Thr Ser
171                    635                 640                 645
172        CAG GCT CCG TGT GTA GAT GGC TTC GAG GAG CCA GGA GCA CGG CAG   1980
173        Gln Ala Pro Cys Val Asp Gly Phe Glu Glu Pro Gly Ala Arg Gln
174                    650                 655                 660
175        CGG GCC CTC AGC GCA GTC AGC GTC CTC ACA AGC GCA CTG GAA GAG   2025
176        Arg Ala Leu Ser Ala Val Ser Val Leu Thr Ser Ala Leu Glu Glu
177                    665                 670                 675
178        TTA GAG GAG TCT CGC CAC AAG TGT CCA CCA TGC TGG AAC CGT CTC   2070
179        Leu Glu Glu Ser Arg His Lys Cys Pro Pro Cys Trp Asn Arg Leu
180                    680                 685                 690
181        GCC CAG CGC TAC CTG ATC TGG GAG TGC TGC CCG CTG TGG ATG TCC   2115
182        Ala Gln Arg Tyr Leu Ile Trp Glu Cys Cys Pro Leu Trp Met Ser
183                    695                 700                 705
184        ATC AAG CAG GGA GTG AAG TTG GTG GTC ATG GAC CCG TTT ACT GAC   2160
185        Ile Lys Gln Gly Val Lys Leu Val Val Met Asp Pro Phe Thr Asp
186                    710                 715                 720
187        CTC ACC ATC ACT ATG TGC ATC GTA CTC AAC ACA CTC TTC ATG GCG   2205
188        Leu Thr Ile Thr Met Cys Ile Val Leu Asn Thr Leu Phe Met Ala
189                    725                 730                 735
190        CTG GAG CAC TAC AAC ATG ACA AGT GAA TTC GAG GAG ATG CTG CAG   2250
191        Leu Glu His Tyr Asn Met Thr Ser Glu Phe Glu Glu Met Leu Gln
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192                 740                 745                 750
193   GTC GGA AAC CTG GTC TTC ACA GGG ATT TTC ACA GCA GAG ATG ACC   2295
194   Val Gly Asn Leu Val Phe Thr Gly Ile Phe Thr Ala Glu Met Thr
195                 755                 760                 765
196   TTC AAG ATC ATT GCC CTC GAC CCC TAC TAC TAC TTC CAA CAG GGC   2340
197   Phe Lys Ile Ile Ala Leu Asp Pro Tyr Tyr Tyr Phe Gln Gln Gly
198                 770                 775                 780
199   TGG AAC ATC TTC GAC AGC ATC ATC GTC ATC CTT AGC CTC ATG GAG   2385
200   Trp Asn Ile Phe Asp Ser Ile Ile Val Ile Leu Ser Leu Met Glu
201                 785                 790                 795
202   CTG GGC CTG TCC CGC ATG AGC AAC TTG TCG GTG CTG CGC TCC TTC   2430
203   Leu Gly Leu Ser Arg Met Ser Asn Leu Ser Val Leu Arg Ser Phe
204                 800                 805                 810
205   CGC CTG CTG CGG GTC TTC AAG CTG GCC AAA TCA TGG CCC ACC CTG   2475
206   Arg Leu Leu Arg Val Phe Lys Leu Ala Lys Ser Trp Pro Thr Leu
207                 815                 820                 825
208   AAC ACA CTC ATC AAG ATC ATC GGG AAC TCA GTG GGG GCA CTG GGG   2520
209   Asn Thr Leu Ile Lys Ile Ile Gly Asn Ser Val Gly Ala Leu Gly
210                 830                 835                 840
211   AAC CTG ACA CTG GTG CTA GCC ATC ATC GTG TTC ATC TTT GCT GTG   2565
212   Asn Leu Thr Leu Val Leu Ala Ile Ile Val Phe Ile Phe Ala Val
213                 845                 850                 855
214   GTG GGC ATG CAG CTC TTT GGC AAG AAC TAC TCG GAG CTG AGG GAC   2610
215   Val Gly Met Gln Leu Phe Gly Lys Asn Tyr Ser Glu Leu Arg Asp
216                 860                 865                 870
217   AGC GAC TCA GGC CTG CTG CCT CGC TGG CAC ATG ATG GAC TTC TTT   2655
218   Ser Asp Ser Gly Leu Leu Pro Arg Trp His Met Met Asp Phe Phe
219                 875                 880                 885
220   CAT GCC TTC CTA ATC ATC TTC CGC ATC CTC TGT GGA GAG TGG ATC   2700
221   His Ala Phe Leu Ile Ile Phe Arg Ile Leu Cys Gly Glu Trp Ile
222                 890                 895                 900
223   GAG ACC ATG TGG GAC TGC ATG GAG GTG TCG GGG CAG TCA TTA TGC   2745
224   Glu Thr Met Trp Asp Cys Met Glu Val Ser Gly Gln Ser Leu Cys
225                 905                 910                 915
226   CTG CTG GTC TTC TTG CTT GTT ATG GTC ATT GGC AAC CTT GTG GTC   2790
227   Leu Leu Val Phe Leu Leu Val Met Val Ile Gly Asn Leu Val Val
228                 920                 925                 930
229   CTG AAT CTC TTC CTG GCC TTG CTG CTC AGC TCC TTC AGT GCA GAC   2835
230   Leu Asn Leu Phe Leu Ala Leu Leu Leu Ser Ser Phe Ser Ala Asp
231                 935                 940                 945
232   AAC CTC ACA GCC CCT GAT GAG GAC AGA GAG ATG AAC AAC CTC CAG   2880
233   Asn Leu Thr Ala Pro Asp Glu Asp Arg Glu Met Asn Asn Leu Gln
234                 950                 955                 960
235   CTG GCC CTG GCC CGC ATC CAG AGG GGC CTG CGC TTT GTC AAG CGG   2925
236   Leu Ala Leu Ala Arg Ile Gln Arg Gly Leu Arg Phe Val Lys Arg
237                 965                 970                 975
238   ACC ACC TGG GAT TTC TGC TGT GGT CTC CTG CGG CAC CGG CCT CAG   2970
239   Thr Thr Trp Asp Phe Cys Cys Gly Leu Leu Arg His Arg Pro Gln
240                 980                 985                 990
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VERIFICATION SUMMARY　　　　　　　　　DATE: 08/02/2004
PATENT APPLICATION:　**US/10/685,237**　　　TIME: 14:39:25

Input Set : **N:\Crf3\RULE60\10685237.raw**
Output Set: **N:\CRF4\08022004\J685237.raw**

L:21 M:220 C: Keyword misspelled or invalid format, [(A) APPLICATION NUMBER:]
L:22 M:220 C: Keyword misspelled or invalid format, [(B) FILING DATE:]
L:27 M:238 W: Alpha Fields not Ordered, Reordered [(C) CLASSIFICATION:] of (1)(vi)